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(54) TREATMENT SOLUTION FOR FORMING HEXAVALENT CHROMIUM-FREE RUST PREVENTIVE COATING ON PLATED FILM WITH ZINC AND ZINC ALLOY, HEXAVALENT CHROMIUM-FREE RUST PREVENTIVE COATING AND METHOD FOR FORMING THE SAME

(57)Abstract:

PROBLEM TO BE SOLVED: To provide an extremely dilute treatment solution for forming extremely thin coating on a plated film of zinc and a zinc alloy, which has corrosion resistance equal to or higher than a conventional coating containing hexavalent chromium, in spite of containing no hexavalent chromium.

SOLUTION: The treatment solution for forming a rust preventive trivalent chromate coating free from hexavalent chromium, includes a silicon compound, and trivalent chromium and oxalic acid of 0.5-1.5 by molar ratio, where trivalent chromium exists as a water-soluble complex with oxalic acid, and cobalt ions stably exists in the treatment solution, without precipitating through forming hardly soluble metal salts with oxalic acid. The treatment solution is characterized by forming a rust preventive trivalent chromate coating free from hexavalent chromium containing zinc, chromium, cobalt and oxalic acid, through reacting with zinc on the plated film of zinc and the zinc alloy, when being contacted with the plated film of zinc and the zinc alloy.

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